(1) \( 2 \times 8 = 16 \) transistors stuck-on in a single stuck-open fault

(b) stuck-open faults in a group of series transistors are indistinguishable
- stuck-on faults in a group of parallel transistors are indistinguishable
- after collapsing, the total # of faults is

\[
2 \times 8 - 4 + 2 - 4 + 2 = 16 - 8 + 4
\]

(5) stuck-at - 1
(2) $P_0 = M$

**Objective**

- $D = 0$
- $A = 0$

**Assumption**

- $H_2 = 1$
- $C = 0$
- $B = 1$

**Implications**

- $D = 0$, $D_1 = 9$
- $D_3 = 1$, $A_4 = 0$
- $A_5 = 1$

- $E = 0$

**Decision Tree**:

```
  A
   |
  --|--
   |  |
   |  L
   |
```

- $B_2 = 1$, $B_4 = 1$
- $B_5 = 0$, $H_1 = 0$
- $H_3 = 1$, $I = 0$
- $J = 0$
- $G_7 = 0$

$G_5$, $G_6$
Fan:

Step 1: To activate the fault, assume $D = 1$.
This implies

$$D_1 = 0, \quad D_2 = 0, \quad D_3 = 1/0.$$  

D-frontend = $\{ G_5, G_6 \}$

There is a chain between $G_5$ & $G_6$.
So select $G_5$ as requested.

Step 2: To propagate 0% through $G_5$.
Initial objective = $(H_3, 0, 1)$
$D$ is unjustified.
So the current objective = $(H_3, 0, 1)$
$(D, 1, 0)$

Step 3: Perform m-backtrace.

$$(A_1, 1, 0) \rightarrow (H_2, 1, 0) \rightarrow (E, 1, 0) \rightarrow (A_3, 1, 0) \rightarrow (F, 1, 0) \rightarrow (A_4, 1, 0) \rightarrow (A_5, 1, 0) \rightarrow (A_4, 0, 1) \rightarrow (A_2, 1, 1) \rightarrow (A, 2, 1) \rightarrow A$ is assumed logic 0.

Get clean tree $\square$
Step 4: perform implication

\[ A = 0 \rightarrow D = 0 \rightarrow D_1 = \% \]

\[ \rightarrow E = 0 \rightarrow A_4 = 0, \; A_5 = 1 \]

Step 5: initial objective \((H_3, 0, 1)\) not met.

Current objective \((H_3, 0, 1)\),

- backtrace

\(H_2, 1, 0) \rightarrow (F, 1, 0) \rightarrow (B_5, 1, 0)\)

\( \downarrow \)

\((B_4, 0, 1)\)

\( \downarrow \)

\((B_3, 0, 1)\)

\( \rightarrow B \uparrow\) assume 1.

\( \downarrow \)

\((B, 0, 1)\)

Step 6: perform implication.

\(B = 1 \rightarrow B_4 = 1 \rightarrow B_5 = 0 \rightarrow F = 0 \rightarrow H = 0\)

\( \rightarrow G_5 = \% \)

\( \rightarrow G_7 = \% \)

\( \rightarrow G_6 = 0\)
\( a_0, c_0, c_1, d_1, e_1 \)

- \( a_0, c_0 \) detected by the 1st pattern.
- \( c_1 \) detected by the 2nd pattern.